ADSL's potential strongly contradicts the SPR Study's assertion that *all* the ILECs' installed base of copper cable is obsolete beyond redemption. Indeed, implementing the changes in network infrastructure necessary to make ADSL available to all end users that desire it will be relatively easy and inexpensive (particularly compared with the astronomical expense involved in pulling up all existing copper distribution cable and replacing it with fiber), and will still enable the ILECs to provide extremely high bandwidth services to end users. From both an economic and a technological perspective, "ADSL ... is an innovative and cost-effective solution for providing a plethora of interactive digital multimedia services through the billions of miles of [copper] telephone lines initiated by Alexander Graham Bell's first conversation... The reuse of Bell's twisted pairs makes the economics of an information superhighway tangible — anything else is cost-prohibitive in reality."[72]

It is reliably estimated that more than 80% of the residential access lines currently installed in the United States are already capable of supporting Asynchronous DSL (ADSL).[73] ADSL is widely regarded as a technology that will allow the ILECs to provide full broadband and wideband services, including potentially lucrative video and Internet services, to customers. All seven RBHCs, as well as GTE, are currently running ADSL trials, and both Pacific Telesis and US West plan to introduce the service commercially in the next year.[74] The BOCs are currently extremely enthusiastic about the prospects of ADSL as *the* medium-of-choice for near-term broadband services. For example, Jeff Waldhuter, executive director of NYNEX Science and Technology has said, "[f]ive years from now, some people will still be using dial-up modems, some will be using ISDN and even more will be using ADSL."[75] The DSL technologies offer an enormous, and still growing, potential.[76] Given the speed with which the ILECs have

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72. Cioffi, John M., "ADSL Answers the Need for Speed," *Telephony*, August 12, 1996, at 36.

73. Cioffi, John, "ADSL Answers the Need for Speed," *Telephony*, August 12, 1996, at 35.

74. Hawley, George T., "ADSL Data: The Next Generation," *Telephony*, August 12, 1996, at 34. US West will begin offering single-pair, high-bit-rate DSL followed by ADSL in 10 cities (including Denver, Salt Lake City, Seattle and Portland, Oregon) by the middle of 1997. Pacific Bell will offer ADSL out of 10 COs beginning in September. (Beth Snyder, "DSL: Coming Soon?" *Telephony*, February 3, 1997, at 29)

75. *Id.*, at 36.

76. For example, another member of the DSL family, very high DSL, or VDSL, is already capable of data transfers at the phenomenal rate of 20 to 30 Mbps, albeit only over short loop lengths (Hawley, George T., "ADSL Data: The Next Generation," *Telephony*, August 12, 1996, at 36.), and Nortel and Broadcom have announced that they are working on an ADSL chip that will support data rates of up to 52 Mbps. ("Nortel and Broadcom Announce Collaboration to Develop Low-cost, Single Chip ADSL Technology," Nortel Press Release, August 22, 1996.)

embraced these new technologies in order to meet customer needs, the embedded copper distribution facilities are more valuable to the ILECs than ever.

Far from being "obsolete," modern digital switches are designed to be easily and regularly upgraded, giving them new and expanded functionality at a fraction of the cost of purchasing an entirely new switch.

The other main category of "obsolete" telephone plant cited by the SPR Study is "Digital ESS," that is, existing switch architecture. SPR claims — without citing any supporting facts — that a combination of price declines and functional obsolescence render existing digital switches almost totally useless. As a result, they conclude, only the wholesale replacement of such switches will enable the ILECs to remain competitive. Such unfounded claims have absolutely no basis in reality. Indeed, SPR does not even specify where the supposed replacement switches will come from — those that it considers obsolete are the most advanced currently on the market — and are still to this day being acquired and expanded by ILECs nationwide.

The manufacturers of modern digital switching systems, including Nortel and Lucent Technologies, have created hardware and software that are exceptional in their robustness and in their ability to efficiently route and handle calls. Moreover, the existing generation of digital electronic switches was also designed for great flexibility. Switches are designed to be modular, so that it is extremely easy to add or expand capacity, not to mention new functionalities. It is difficult to conceive of a scenario in which the cost effective solution will be the swapping of an existing switch for an entirely new one, when the same evolutionary steps will also exist in the form of much simpler hardware and software upgrades.

The fundamental flaw in the SPR Study is perhaps best exemplified by their argument that "CO switches have been obsoleted an entire generation at a time by new technologies that enable entirely new functionality or offer significant efficiency."[77] This statement reveals an almost complete lack of regard for the architecture of modern digital electronic switches. Indeed, in order to subscribe to the arguments put forward in the SPR Study, one would have to think of the switch as a solid, "black box" piece of machinery incapable of adapting to meet new needs and demands; as SPR sees it, once new demand exceeds the unexpanded capabilities of an existing switch, the ILEC will have no choice but to cast it aside completely and purchase a brand new replacement. Modern digital electronic switches, including Lucent Technologies's 5ESS switch and Nortel's DMS-100 (which the

77. SPR Study, at 13.

SPR Study for some reason ignores entirely), are designed to be both *modular* and *evolvable*. These switches have been designed and built so that it is easy for individual components and capabilities to be added and upgraded over time. Such upgrades cost far less than replacing the entire switch, and, short of a new technological breakthrough on the order of the microchip, make it very unlikely that they will ever become economically or technologically obsolete in the relevant future.

Nortel's DMS-10 switch was first introduced in 1977.[78] In spite of representing a 20-year-old technology, the DMS-10 possesses an inherent modularity and flexibility that means that it continues to be used and useful (and marketed) today for tomorrow's services. Indeed, because of upgrades to the switch components, the DMS-10 provides a full range of voice and data services, and complies with regulatory features like Expanded International Dialing, Interchangeable Numbering Plan Area codes, Carrier Identification Code expansion, and Local Number Portability (LNP).[79] Nortel's other main switch, the DMS-100, is similarly flexible in the services it can offer, and in its ability to handle increased capacity with only the incremental cost of adding new modules.[80] Lucent Technologies' 5ESS-2000, the most recent iteration of the 5ESS line, is similarly robust in its design and capabilities. The 5ESS provides a full range of advanced features, including Internet congestion relief, simplified ISDN provisioning, full number portability software, wireless capabilities, and enhanced long distance services, all combined with the flexibility to expand and add even newer features, as they are developed.[81]

The SPR Study is factually wrong in its assertion that any likely network changes will render existing digital switches obsolete.

One line of SPR's argument is that implementing the Telcommunications Act of 1996 will require changes in embedded "ESS software" "*orders of magnitude greater than those required to implement Equal Access after Divestiture — a change which, itself, effectively*

78. "DMS-10 Systems," Nortel Public Carrier Networks, Nortel home page, http://www.nortel.com/pcn/products/dms10.html, downloaded February 6, 1997.

79. *Id.*

80. *See:* "DMS 100/200 Local Switching System," Nortel Public Carrier Networks, Nortel Home Page, http://www.nortel.com/pcn/products/local.html, downloaded February 6, 1997.

81. *See:* "Lucent Technologies Speeds Software Time to Market with Rapid Software Delivery; Enhanced Switch Software Reduces Internet Congestion," Lucent Technologies Press Release, February 5, 1997, http://www.lucent.com/press/0297/970205.nsa.html, downloaded February 6, 1997.

obsoleted [sic] *a whole generation of switching equipment.*"[82] This statement, which SPR fails to support with any evidence, is totally specious. As discussed above, both Nortel and AT&T had introduced their present digital switch architectures well before the 1984 divestiture. SPR then goes on to state that, "upgrading existing switches to provide database number portability and/or intraLATA presubscription may not be cost-effective"[83] In fact, *all switch manufacturers have already introduced upgrades to existing switches that allow for local number portability* (LNP). Lucent has upgrades for its 1A and 5 ESS switches, and Nortel for its DMS switches. SPR is wrong. LNP will be provided through software updates to the embedded base of switches.

The SPR Study also states that new competitors will provide a "single, cohesive body of customer needs," including "local, interLATA, basic, enhanced, voice, video, Internet, *etc.*,"[84] which is impossible for the ILECs and their obsolete ESS switches. Again, this statement is simply not true. For example, Lucent's latest 5ESS software upgrade makes it fully capable of services including wireless, advanced Internet and on-line service provisioning, long distance, interactive video and multimedia, long distance enhancements, ISDN features, and others.[85]

The SPR Study argues that the rapid growth of data traffic on the voice telephone network, i.e., calls to Internet Service Providers (ISPs) and other Enhanced Service Providers (ESPs), is yet another factor in the obsolescence of existing digital switches.[86] As the SPR Study itself observed, however, "[q]uite likely, these growing streams of traffic will be diverted away from the embedded base of voice-optimized CO switches to new generations of switches based on Asynchronous Transfer Mode (ATM) or other new technology."[87] As stated in the previous section, the network is in reality evolving into two interlaced networks, one for data and high-bandwidth features, the other for voice, but both retaining the existing copper distribution architecture as their primary consumer and small business end-user interface. Sorting data from voice calls at the end office level, and routing them away from the public switched network, is already possible. At least two different methods are now available for this. Tellingly, neither method involves the

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82. SPR Study, at 16. (emphasis as in original.)

83. *Id.*, at 16.

84. SPR Study, at 16.

85. "The 5E11 Software Release," Lucent Technologies Home Page, http://www.lucent.com/netsys/5ESS/5e11/index.html, downloaded February 6, 1997.

86. SPR Study, at 15.

87. SPR Study, at 14.

replacement of end office switches; indeed, both are based upon the current design of the existing generation of such switches.

One such option involves removing data from the voice network entirely:

- A product from Nortel called the Digital Thruway[88], as well as Lucent's latest revision to it's 5ESS switching system, have both been designed to recognize data calls and route them onto a separate (packet) network, which would then handle them efficiently, away from the voice network. Nortel's product is essentially a device located on the line side of the end office switch, screening calls on the basis of the telephone number dialed. When the Digital Thruway recognizes the number of an ESP or ISP, the call is routed away from the end office switch, and onto a separate data network.

- Lucent's 5ESS-2000 upgrade provides a service called the Internet Access Gateway.[89] This adjunct to the 5ESS switch allows data calls to bypass the concentration stage of the switch. Currently, such calls are then routed over the existing network, but in a way that does not impose any cost in terms of switch resources. Eventually, however, the Gateway product will migrate data to separate, but interconnected, data networks.

- At least two other companies, Telco Systems and DSC Communications have also announced similar products, providing no shortage of options for carriers.[90]

That the BOCs recognize the value of this solution to the Internet problem is indicated by the recent announcement that Southwestern Bell has adopted the use of Nortel's product on a large scale, as part of its Internet/Intranet Transport Service.[91] All these systems route voice calls to the existing digital end office switch, which then handles those calls exactly as it does currently. In neither case is there any reason why the end office switch itself should have to be retired and replaced.

The second option involves using the existing digital switch itself (as opposed to an adjunct or addition) to sort data from voice calls, and route it appropriately and cost-effectively. The current generation of digital switches can easily be configured so that

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88. *See* "Nortel Announces Internet Thruway for Public Carriers," Nortel News Release, August 27, 1996.

89. *See:* Snyder, Beth, "Switch Upgrades Relieve Heavy Traffic," *Telephony*, July 1, 1996, at 10.

90. Snyder, Beth. "Rerouting Internet Traffic Jams: Vendors Vie to Ease Voice Network Standstill," *Telephony*, November 11, 1996, at 12.

91. *See:* Nortel Advertisement, *New York Times*, Tuesday, February 4, 1997, at C3.

even extremely heavy data traffic can be handled flexibly and efficiently. Jack Kozik and Mark Lassig, a pair of Lucent Technologies network architects, argue that the appropriate way to deal with data traffic is actually "a single network design that takes advantage of existing switching and network resources."[92] Because of the modular nature of existing high-capacity switches, different parts of a single switch can be engineered in different ways; customers who require or desire data connections can be routed to portions of existing switches engineered to handle them in a cost-effective manner. This holds true *regardless of usage*, since advanced switching systems can be engineered to cost-effectively offer what are in effect one-to-one connections.[93] Data traffic could thus be routed through an appropriately-engineered switch onto a data network directly. Kozik and Lassig estimate that such "a single network design is roughly 15% more cost-effective than an overlay."[94] This sort of reconfiguration would enable carriers to "accommodate a data-intensive world while continuing to earn on their original switching investment."[95] There would be neither need nor justification for routing data traffic away from existing digital switches at all. And it is important to note that this solution involves only *modifications* to the architecture of those switches, not entirely new equipment (and not even the addition of a new component in front of the switch).

Clearly, either of these solutions to the "Internet problem" will result in *extending* the life of the digital switches, not rendering them obsolete as the SPR Study erroneously claims.

Several final examples demonstrate that the expense of purchasing entirely new switches is so great that it is almost always more efficient to upgrade existing switches.

There are several other technological developments which also illustrate that existing digital switches will continue to provide new features and services for the forseeable future.

- In 1995, AT&T was faced with a major problem: the physical exhaust of the existing 4ESS digital switches that have constituted the backbone of the Company's long

92. Kozik, Jack, and Mark Lassig: "No Detours," *Telephony*, February 3, 1997, at 38.

93. *Id.*, at 42.

94. *Id.*, at 40.

95. *Id.*, at 40.

distance network since 1976.[96] Among the options considered by AT&T's engineers were the design of a totally new switch, the total replacement of the 4ESS with the more modern 5ESS, and the development of a new central processing system for the existing switch.[97] From a business as well as a technical standpoint, only the evolutionary option, that is, developing a new processor for the existing switch, was considered feasible and was implemented.[98] Logically, it made the most economic sense to build on the features already present in the existing switches, rather than install totally new ones. AT&T's upgrade of its switches parallels in many ways the situation ILECs face when considering upgrades of their own switches: Creating and installing a new processing system gave the existing 4ESS switches the full capabilities of entirely new switches, at a fraction of the cost.

- AT&T's (now Lucent's) development of the new 5ESS-2000 upgrade to its 5ESS digital switch provides still further support of the inherent flexibility of switch infrastructures. The 5ESS switch "has never required the major reconstruction and change-out of equipment that other switching systems have experienced."[99] This particular upgrade involved the introduction of a new component, the SM-2000, which provided greater flexibility and processing power to *existing* switches, by simply plugging into them, either as new additions or as replacements for components of the switch. AT&T specifically designed the new module to work seamlessly with existing switches, because such a product "preserves the service provider's investment in the embedded base of 5ESS Switches."[100] Indeed, given an installed base of "over 2,000 5ESS Switch exchanges worldwide, and 50 million lines in service, it was essential that the SM-2000 be easily added to existing in-service 5ESS Switches."[101]

- Upgrades to the software that runs the digital switches themselves will only grow more frequent and routine over time. In response to customer needs, Lucent Technologies, for instance, has just announced a program called the "Rapid Software Delivery"

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96. Davis, John H., "An Uneventful Event," *AT&T Technical Journal*, May/June 1995, at 4.

97. Hsu, Jiunn Carl, and Lary A. Seese, "The AT&T Switching Evolution Challenge," *AT&T Technical Journal*, May/June 1995, at 6.

98. *Id.*, at 6.

99. Hornbach, Barbara, William J. Bielawski, *et. al.*, "5ESS-2000 Switch: The Next Generation Switching System," *AT&T Technical Journal*, September/October, 1993, at 4.

100. *Id.*, at 12.

101. *Id.*, at 6.

initiative, under which software upgrades for its 5ESS(R)-2000 switch can be delivered and installed as they are prepared during the year.[102] Rapid Software Delivery reduces switch software download times from hours to minutes, enabling switches to run the latest software versions as they are tested and made available by Lucent.

- Such modularity and adaptability is not just limited to the existing digital switches. Adjunct programmable switches provide an even broader range of adaptability for carriers. Such switches, provided by companies including Excel, Summa Four, and Harris Digital Telephone Systems, generally are "attached" to existing large switches, and provide software-based services or enhancements in a few months, as compared with full switch upgrades, which occur every 12 to 18 months.[103] Deploying a major switch (i.e., the digital electronic switches SPR calls obsolete) can cost $1-million or more; programmable switches cost one-fifth to one-half that price.[104] These switches allow an even higher degree of competition and flexibility in terms of the services that can be offered using existing switch technology. Software and subscriber information are downloaded into the switch at the time of introduction. Subsequent upgrades and new services can be added by simply downloading new programs.[105]

It is certainly true that the current generation of switches of this type will not be cutting-edge forever. However, that does not in any respect justify the assumption that the LECs should — or even would desire to — undertake the most radical solution possible; i.e., a total replacement of the switch in question, when it is likely that routine upgrades will keep them up-to-date at a much lower cost. SPR is simply wrong. Digital switches are designed to be easily adaptable to meet a wide range of customers' present and future requirements. Clearly, it makes far more sense to adopt a solution that *builds on* the functionality of the existing switch, than one which requires its complete replacement. Indeed, it is highly unlikely that a situation would *ever* arise in which the latter option would be more economically justifiable than the former. Given their flexibility and modularity, digital switches will continue to form the core of the local exchange networks for years to come. Such switches are designed to *never need to be totally replaced.*

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102. "Lucent Technologies Speeds Software Time to Market with Rapid Software Delivery; Enhanced Switch Software Reduces Internet Congestion," Lucent Technologies Press Release, February 5, 1997, http://www.lucent.com/press/0297/970205.nsa.html, downloaded February 6, 1997.

103. O'Shea, Dan, "Programmable Switching: The Flexible Foundation," *Telephony*, March 4, 1996, at 22.

104. *Id.*, at 22.

105. *Id.*, at 26.

3 | CONCLUSION

The NPRM raises a number of empirical issues concerning the difference between historical embedded costs and forward-looking costs, and associated ILEC claims to special revenue recovery mechanisms. In two prior studies, *Assessing Incumbent LEC Claims to Special Revenue Recovery Mechanisms: Revenue opportunities, market assessments, and further empirical analysis of the "Gap" between embedded and forward-looking costs* (submitted as part of AT&T's Comments, filed January 29, 1996 in this proceeding), and *Analysis of Incumbent LEC Embedded Investment: An Empirical Perspective on the "Gap" Between Historic Costs and Forward-looking TSLRIC* (submitted as part of AT&T's Reply Comments, filed May 30, 1996), ETI provides an empirical framework and concrete evidence that responds to the Commission's inquiries and soundly refutes ILECs claims to special recovery mechanisms.

ETI's empirical analysis demonstrates that the existence of a "gap" between historical embedded costs and forward-looking economic costs cannot be ascribed to the technological or economic obsolescence of ILEC plant put in place to satisfy basic service demand as part of any explicit or implicit pre-competition regulatory bargain imposed upon the ILECs. Not only was the majority of the net rate base on ILEC books as of the end of 1996 acquired in recent years (i.e., on or after January 1, 1990 following adoption of price caps regulation), a substantial portion of that post-1990 investment can be attributed to the ILECs' pursuit of other strategic business goals and positioning for entry into new lines of competitive services. Moreover, recent technological advances (e.g., ADSL, digital switch updates) will dramatically extend the life of the installed base of ILEC plant. ETI's empirical analysis also demonstrates that, on balance, the opportunities for revenue expansion and market growth available to ILECs under the current regulatory/competitive environment are more than sufficient to offset any revenue losses that may arise from potential competition or due to the alignment of rates to economic forward-looking costs as proposed for access charges.

The results of ETI's studies are consistent with the findings presented in a recent study on behalf of the American Association of Retired Persons, the Consumer Federation of

America, and the Consumers Union.[106] The study, entitled, *Money for Nothing: The Case Against Revenue Replacement in the Transition to Local Exchange Competition: A Consumer View of the Gap Between Efficient Prices and Embedded Costs*," identifies (and quantifies) a number of factors contributing the differences between the ILECs' claimed embedded costs and efficient or forward-looking economic costs, including excess profits, strategic investment, inefficiencies, and misallocated costs.[107] Citing extensive evidence from Wall Street analysts, the study also concurs in the finding that the new opportunities gained by the ILECs pursuant to the 1996 Act will more than compensate for any additional risk ILECs may encounter under the new competitive paradigm established by the Act.[108] The study similarly concludes, based upon the empirical analysis examined, that "there is little likelihood that any claim to stranded investment recovery will be supportable."[109]

By contrast, in their initial presentations to the Commission, USTA and the ILECs do not directly respond or refute evidence that much of the difference between the revenues generated by access prices based on embedded costs as compared to forward-looking costs is the result of strategic overbuilding of plant and/or inefficiencies. Similarly, USTA and the ILECs do not directly respond or refute evidence that they have enjoyed considerable excess earnings since the adoption of price cap regulation, or that investors perceive those opportunities to be enhanced with passage of the 1996 Act. Rather, USTA and the ILECs' initial presentation to the Commission can be characterized as largely unsupported assertions of entitlement based upon (1) their own creative interpretation of regulatory compacts (of questionable applicability in the case of rate of return regulation and not even remotely applicable under the price cap regime they have been operating under for the past several years); and (2) exaggerated claims of technological and economic obsolescence of their installed based of plant based upon the dogmatic application of theoretical substitution theories and that appear to ignore the substantial body of technological evidence now available concerning ILEC embedded plant.

While the ILECs are free to make strategic investments or to acquire capacities and capabilities that will support their long term overall business goals, these costs are not properly recovered through special revenue recovery mechanisms assessed on competitors

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106. See Initial Comments of American Association of Retired Persons, the Consumer Federation of America, and the Consumers Union, dated January 29, 1996, Attachment 1, *Money for Nothing: The Case Against Revenue Replacement in the Transition to Local Exchange Competition: A Consumer View of the Gap Between Efficient Prices and Embedded Costs*," January 1997.

107. *Money for Nothing*, *op cit*, p. 21.

108. *Id.*, p. 27.

109. *Id.*, p. 34.

and customers of ILEC basic services *absent a demonstrative showing of a cost causative link to basic local exchange or exchange access services for the ILEC plant currently on the books, and which according to USTA and the ILECs, is on the verge of replacement.* USTA and the ILECs do not come remotely close to making the required showing that their investments would have been made on the basis of cost savings or demand-related requirements strictly related to basic local exchange service without consideration of additional revenues from non-basic services. Accordingly, no persuasive claim of special revenue recovery can be made.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)
	)
Access Charge Reform	)
CC Docket No. 96-262	)
	)

Affidavit of Richard B. Lee

1. My name is Richard B. Lee. I am a Vice President of the economic consulting firm of Snavely King Majoros O'Connor & Lee, Inc. I submit this affidavit in response to the Commission's Notice of Proposed Rulemaking ("NPRM") in CC Docket No. 96-262, Access Charge Reform, released December 24, 1996.

2. I prepared the attached report entitled AReply to Local Exchange Carrier Depreciation Reserve Arguments@ on behalf of AT&T. The facts and analyses presented therein are true and correct to the best of my knowledge, information and belief.

The foregoing statements are true and correct to the best of my knowledge, information and belief.

Richard B. Lee

REPLY TO
LOCAL EXCHANGE CARRIER
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Richard B. Lee

Vice President
Snavely King Majoros O'Connor & Lee, Inc.

February 14, 1997

REPLY TO
LOCAL EXCHANGE CARRIER
DEPRECIATION RESERVE ARGUMENTS

I. INTRODUCTION

The Commission's Access Charge NPRM invited comments on the extent to which under-depreciation contributes to the difference between the embedded and forward-looking costs of local exchange access.[1] In its Comments, the United States Telephone Association ("USTA") contends that a significant depreciation reserve deficiency exists.[2] A number of individual local exchange carriers ("LECs") support USTA's contention in their Comments.[3]

This report responds to these contentions. Part II demonstrates that a traditional theoretical reserve calculation based upon the lives currently prescribed by the Commission results in a depreciation reserve surplus, not a deficiency, as of the end of 1996.

In summary, this report concludes that the LECs do not have a reserve deficiency for the provision of telecommunications services.

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[1] Access Charge Reform, CC Docket No. 96-262. FCC 96-488, Notice of Proposed Rulemaking released December 24, 1996 ("Access Change NPRM"), para. 254.

[2] Comments of USTA, p. 74.

[3] See, e.g., Comments of Ameritech, p. 51; GTE, p. 39; U S West, p. 82.

II. THEORETICAL RESERVE CALCULATIONS DO NOT INDICATE A DEPRECIATION RESERVE DEFICIENCY

The USTA alleges that nine price cap LECs have an aggregate depreciation reserve deficiency of $17.9 billion as of the end of 1996.[4] Although this calculation purports to be consistent with the Commission's depreciation study procedures,[5] it does not utilize Commission prescribed lives. Instead, the theoretical reserve calculation for each LEC is based upon lives which are "consistent with its financial reporting."[6] These lives were "reviewed and recommended by Dr. Lawrence Vanston of Technology Futures Inc."[7]

As explained in our Initial Report, neither the lives used by the LECs on their financial books, nor the lives recommended by Technology Futures, Inc. ("TFI"), are appropriate for theoretical reserve calculations.[8]

The lives used for financial accounting purposes are governed by the Generally Accepted Accounting Principle ("GAAP") of "conservatism." As the Commission has found, GAAP is investor-focused, and may not always serve the interest of ratepayers:

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[4] Comments of USTA, Attachment 13. The LECs included are the seven Regional Bell Operating Companies ("RBOCs"), GTE, and the Southern New England Telephone Company ("SNET"). It should be noted that USTA added a $2.3 billion "gross-up" in lieu of actual data for Ameritech.

[5] Id., p. 1.

[6] Id.

[7] Comments of USTA, p. 74.

[8] Comments of AT&T, Appendix C, Analysis of Local Exchange Carrier Depreciation Reserve Levels ("Initial Report"), pp. 6-7 and 9.

> One of the primary purposes of GAAP is to ensure that a company does not present a misleading picture of its financial condition and operating results by, for example, overstating its asset values or overstating its earnings, which would mislead current and potential investors. GAAP is guided by the conservatism principle which holds, for example, that, when alternative expense amounts are acceptable, the alternative having the least favorable effect on net income should be used. Although conservatism is effective in protecting the interest of investors, it may not always serve the interest of ratepayers. Conservatism could be used under GAAP, for example, to justify additional (but, perhaps not "reasonable") depreciation expense by a LEC to avoid its sharing obligation. Thus, GAAP would not effectively limit the opportunity for LECs to manage earnings so as to avoid the sharing zone in the [price cap] basic factor range option. In this instance, GAAP does not offer adequate protection for ratepayers.[9]

Since the GAAP principle of "conservation" creates a bias towards shorter life estimates, the lives used for financial accounting purposes are not appropriate for use in theoretical reserve calculations.

For some LECs, moreover, these lives may be shorter than appropriate due to their plans to replace existing telecommunications networks with integrated telecommunications/video networks. As explained in our Initial Report, the lives recommended by TFI are based upon such a premise.[10] The Commission's rules have long required that the costs associated with the accelerated replacement of facilities for

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[9] Prescription Simplification, Report an Order, FCC 93-452, released October 20, 1993, para. 46.

[10] Initial Report, pp. 6-7.

the benefit of unregulated services be excluded from the regulated accounts.[11] To the extent that LEC financial book lives are shorter due to their plans to provide video programming services, they are inappropriate for use in theoretical reserve calculations.

In addition, these financial book lives may be shorter than appropriate for use in reserve calculations due to LEC plans to replace existing switches and outside plant earlier than otherwise would be the case for normal growth and maintenance needs. As pointed out by Kravtin and Selwyn, "[Our} study concludes that a primary driver of ILEC plant additions and retirements over the past few years was related to and motivated by pursuit of strategic business goals (e.g., additional lines [such as for provision of Centrex services] custom calling) or for entry into new lines of business (e.g., other advanced digital and video services)". [12]

As explained in our Initial Report, the premature retirement of efficient telecommunications technologies could create reserve deficiencies of significant magnitude. For the same reason, premature retirements could lead to an incorrect conclusion that short financial lives are appropriate for use in regulated rates. To the contrary, plant lives for facilities and equipment used to produce regulated services should not be encumbered with the accounting burden imposed by early replacements made for strategic purposes – whether for unregulated or regulated services. To the extent that the LEC financial book lives are shorter due to such plans, they are inappropriate for use in

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[11] Separation of Costs of Regulated Telephone Services from Costs of Nonregulated Activities, CC Docket No. 86-111, Report and Order, FCC 86-564, released February 6, 1987, para. 115.

[12] AT&T Comments, Appendix B, p. vi.

theoretical reserve calculations.

In our Initial Report, we demonstrated that the lives prescribed by the Commission were unbiased and forward-looking.[13] As such, they are appropriate for use in theoretical reserve calculations. As MCI points out, past studies have shown that there is virtually no reserve deficiency when Commission prescribed lives are used in the calculation of the theoretical reserve.[14] Unfortunately, USTA did not provide an update of LEC theoretical reserve studies using Commission prescribed lives.

An estimate of what such studies would reveal can be made, however, using data that USTA did provide. Table 1 of the SPR Report attached to USTA's Comments displays "LEC Estimates of Depreciation Shortfall" by account based upon LEC financial book lives.[15] By adjusting the theoretical reserves shown on this table by the ratio of prescribed lives to financial book lives, one can obtain a reasonable estimate of the LEC theoretical reserve, by account, using Commission prescribed lives as of the end of 1996. As shown on Attachment 2 to this report, at the end of 1996 the LECs had a depreciation reserve surplus, not a deficiency, in each account reviewed.

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[13] Initial Report, pp. 5-6.

[14] Comments of MCI Communications Corporation ("MCI"), p. 72. See, also Comments of the Group of State Consumer Advocates, p. 59.

[15] Comments of USTA, Attachment 15, the Depreciation Shortfall, Strategic Policy Research ("SPR Report"), p. 6.

III. CONCLUSION

This report has demonstrated that LEC contentions that they have a significant depreciation reserve deficiency do not stand up to analysis. As this report has shown, there is no depreciation reserve shortfall.

Calculation of Depreciation Reserve Surplus on a Theoretical Reserve Basis

(As of December 31, 1996)

Account	Financial Life	FCC Life	Theoretical Reserve		Book Reserve	Reserve Surplus
			Financial Basis	FCC Basis		
	a	b	c	d = (a*c)/b	e	f = e-d
Digital ESS	11	16	46.5%	32.0%	35.6%	3.6%
Digital Ckt.	9	11	53.8%	44.0%	51.3%	7.3%
Aerial Copper	16	20	69.6%	55.7%	57.8%	2.1%
Aerial Fiber	20	25	27.1%	21.7%	23.8%	2.1%
UG Copper	16	25	75.4%	48.3%	56.9%	8.6%
UG Fiber	20	25	33.0%	26.4%	27.4%	1.0%
Buried Copper	16	20	60.9%	48.7%	50.5%	1.8%
Buried Fiber	20	25	28.6%	22.9%	25.3%	2.4%

Sources:

Col a = FCC Docket No. 96-262, USTA Comments, Attachment 14 (high end)
Col b = FCC Docket No. 92-296 Orders released 6/28/94 and 5/4/95 (low end)
Col c, e = FCC Docket No. 96-262, USTA Comments, Attachment 15, Table 1

AFFIDAVIT OF BRADFORD CORNELL
IN SUPPORT OF THE REPLY COMMENTS
OF AT&T CORP.

I. INTRODUCTION

I am a Professor of Finance and Director of the Bank of America Research Center at the Anderson Graduate School of Management at UCLA. In addition, I am President of FinEcon, a firm which provides financial economic consulting services to corporations, law firms and government agencies.

I graduated from Stanford University with an A.B. degree in 1970. Subsequently, I received my M.S. in Statistics in 1974 and my Ph.D. in Financial Economics in 1975, also from Stanford. Since 1975 I have been a professor of finance and I have been at UCLA since 1979. In that capacity I have authored over sixty professional articles. I have written a book entitled *Corporate Valuation*, published by Business One Irwin. In addition to my teaching and research, I have served as an expert witness in securities and commercial litigation. A more detailed summary of my experience is contained in the resume attached as Attachment 2. My professional vitae is included as Attachment 3.

I submit this affidavit in response to the Commision's Notice of Proposed Rulemaking ("NPRM") in CC Docket No. 96-262, Access Charge Reform, released December 24, 1996, and particularly in response to the affidavit of Dr. James Vander Weide included in USTA's comments.

II. SUMMARY

- Dr. Vander Weide has provided insufficient explanation to test the mechanics of his analysis.

- His analysis fails tests of reasonableness. It is based fundamentally on historical book costs, not true market values. It also does not account for other LEC assets which contribute to total return, such as appreciation in organizational capital.

- The LECs would prefer rate of return regulation at the authorized 11.25% rate if they were truly underperforming that rate.